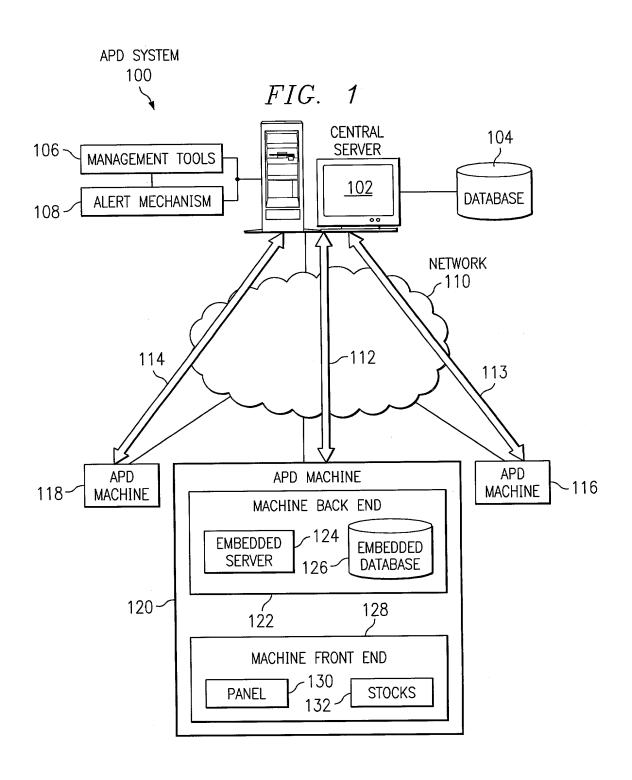AUS920010569US1
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APD SYSTEM
100

FIG. 1

106 — MANAGEMENT TOOLS

CENTRAL
SERVER

104

108 — ALERT MECHANISM

102

DATABASE

NETWORK
110

114

112

113

118 — APD
MACHINE

APD MACHINE

APD
MACHINE — 116

MACHINE BACK END

EMBEDDED
SERVER — 124

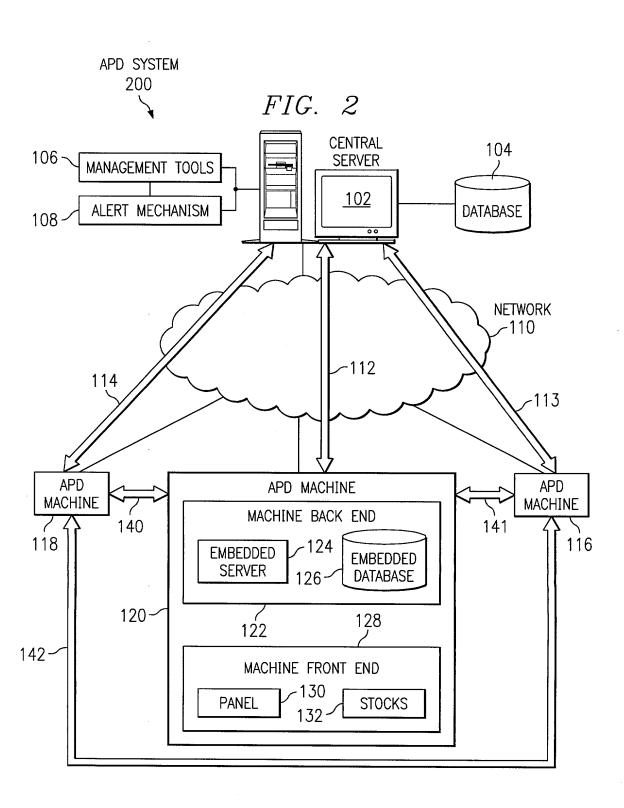126

EMBEDDED
DATABASE

120

122

128

MACHINE FRONT END

PANEL — 130

132

STOCKS

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APD SYSTEM
200

FIG. 2

106 — MANAGEMENT TOOLS

108 — ALERT MECHANISM

CENTRAL
SERVER
102

104

DATABASE

NETWORK
110

114

112

113

APD
MACHINE
118

140

APD MACHINE

MACHINE BACK END

EMBEDDED
SERVER — 124

126 — EMBEDDED
DATABASE

120

122

128

MACHINE FRONT END

PANEL — 130

132 — STOCKS

APD
MACHINE
116

141

142

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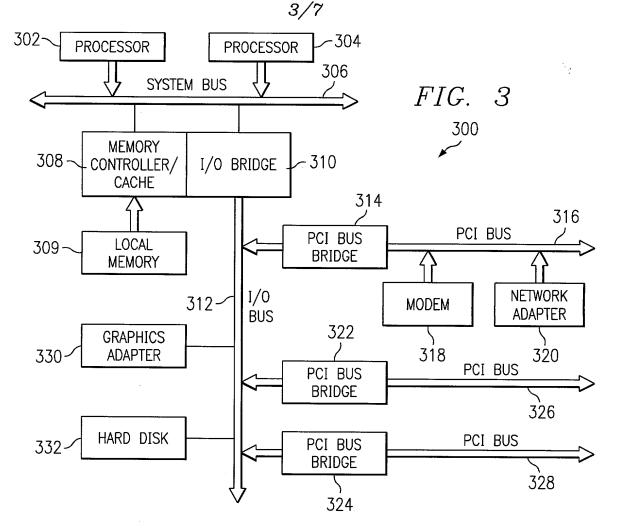Product/Service Dispensing Machines
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302 — PROCESSOR   PROCESSOR — 304
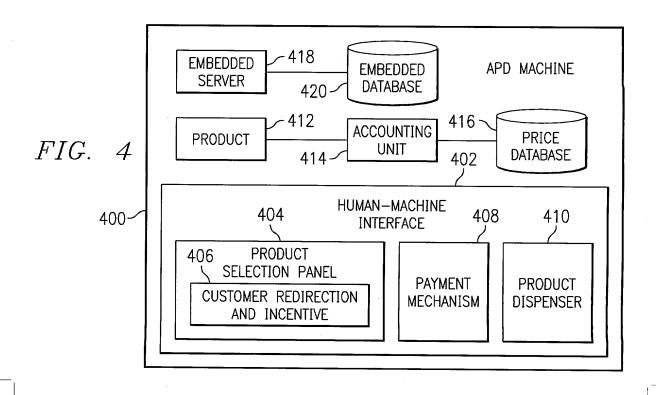
SYSTEM BUS   306

FIG. 3

308 — MEMORY CONTROLLER/ CACHE   I/O BRIDGE — 310

300

309 — LOCAL MEMORY

314

PCI BUS BRIDGE   PCI BUS   316

312 — I/O BUS

330 — GRAPHICS ADAPTER

MODEM   NETWORK ADAPTER

318   320

322

PCI BUS BRIDGE   PCI BUS

332 — HARD DISK   326

PCI BUS BRIDGE   PCI BUS

324   328

FIG. 4

EMBEDDED SERVER — 418   EMBEDDED DATABASE   APD MACHINE

420

PRODUCT — 412   ACCOUNTING UNIT — 416   PRICE DATABASE

414   402

400

HUMAN—MACHINE INTERFACE

404

406   PRODUCT SELECTION PANEL   408   410

CUSTOMER REDIRECTION AND INCENTIVE   PAYMENT MECHANISM   PRODUCT DISPENSER

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FIG. 6

BEGIN

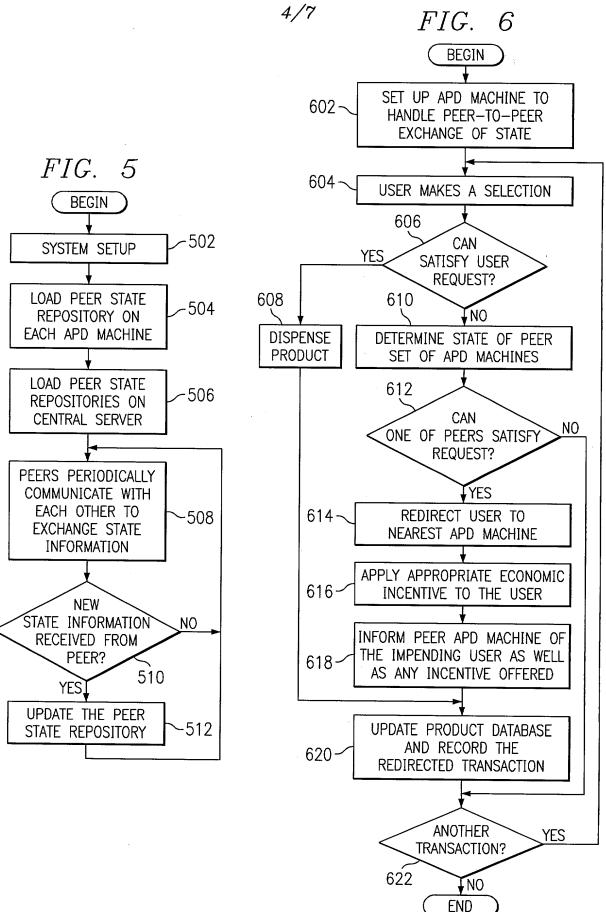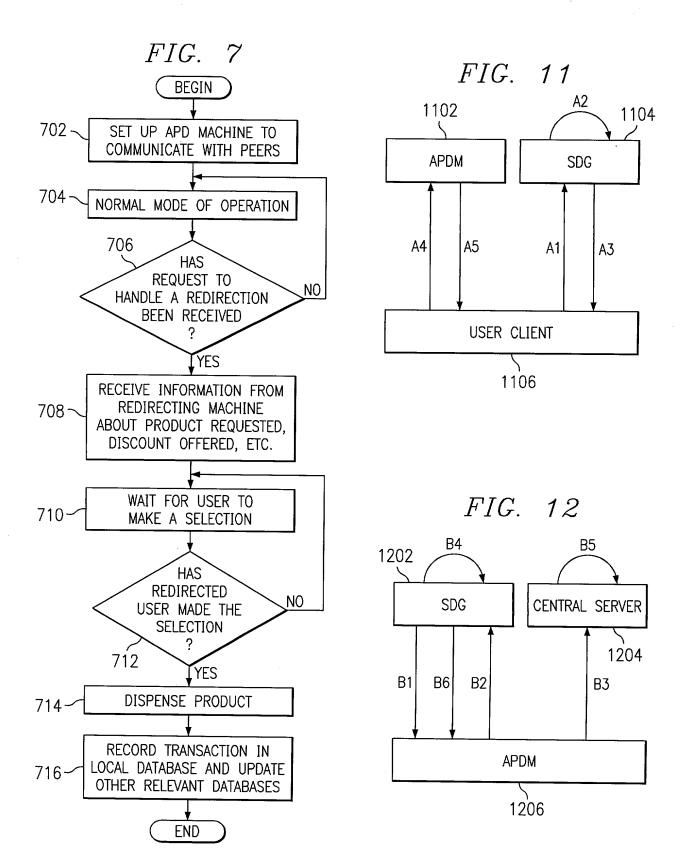602 — SET UP APD MACHINE TO HANDLE PEER-TO-PEER EXCHANGE OF STATE

604 — USER MAKES A SELECTION

606 — CAN SATISFY USER REQUEST?

YES

608 — DISPENSE PRODUCT

NO

610 — DETERMINE STATE OF PEER SET OF APD MACHINES

612 — CAN ONE OF PEERS SATISFY REQUEST?

NO

YES

614 — REDIRECT USER TO NEAREST APD MACHINE

616 — APPLY APPROPRIATE ECONOMIC INCENTIVE TO THE USER

618 — INFORM PEER APD MACHINE OF THE IMPENDING USER AS WELL AS ANY INCENTIVE OFFERED

620 — UPDATE PRODUCT DATABASE AND RECORD THE REDIRECTED TRANSACTION

622 — ANOTHER TRANSACTION?

YES

NO

END

FIG. 5

BEGIN

502 — SYSTEM SETUP

504 — LOAD PEER STATE REPOSITORY ON EACH APD MACHINE

506 — LOAD PEER STATE REPOSITORIES ON CENTRAL SERVER

508 — PEERS PERIODICALLY COMMUNICATE WITH EACH OTHER TO EXCHANGE STATE INFORMATION

510 — NEW STATE INFORMATION RECEIVED FROM PEER?

NO

YES

512 — UPDATE THE PEER STATE REPOSITORY

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FIG. 7

BEGIN

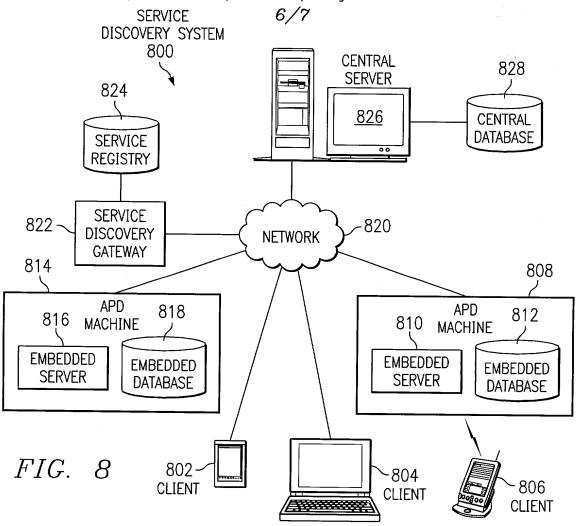702 — SET UP APD MACHINE TO COMMUNICATE WITH PEERS

704 — NORMAL MODE OF OPERATION

706 — HAS REQUEST TO HANDLE A REDIRECTION BEEN RECEIVED ? — NO

YES

708 — RECEIVE INFORMATION FROM REDIRECTING MACHINE ABOUT PRODUCT REQUESTED, DISCOUNT OFFERED, ETC.

710 — WAIT FOR USER TO MAKE A SELECTION

HAS REDIRECTED USER MADE THE SELECTION ? — NO

712

YES

714 — DISPENSE PRODUCT

716 — RECORD TRANSACTION IN LOCAL DATABASE AND UPDATE OTHER RELEVANT DATABASES

END

FIG. 11

1102 — APDM

A2 — 1104 — SDG

A4   A5   A1   A3

USER CLIENT

1106

FIG. 12

1202 — SDG   B4

1204 — CENTRAL SERVER   B5

B1   B6   B2   B3

APDM

1206

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SERVICE
DISCOVERY SYSTEM
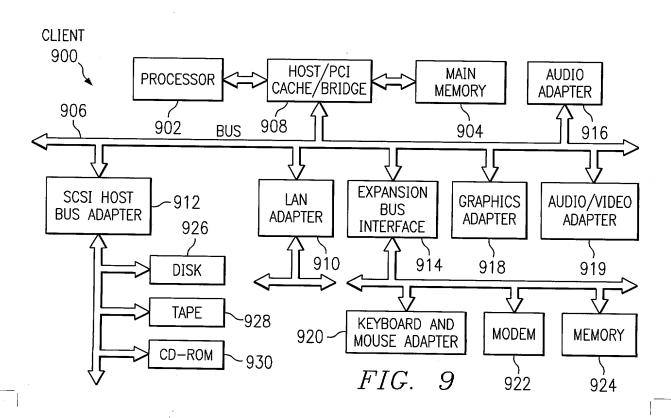800

824

SERVICE
REGISTRY

CENTRAL
SERVER

826

828

CENTRAL
DATABASE

822

SERVICE
DISCOVERY
GATEWAY

NETWORK   820

814

APD
MACHINE   818

816

EMBEDDED
SERVER

EMBEDDED
DATABASE

808

APD
MACHINE   812

810

EMBEDDED
SERVER

EMBEDDED
DATABASE

FIG. 8

802
CLIENT

804
CLIENT

806
CLIENT

CLIENT
900

PROCESSOR

HOST/PCI
CACHE/BRIDGE

MAIN
MEMORY

AUDIO
ADAPTER

906

902   BUS   908

904

916

SCSI HOST
BUS ADAPTER   912

926

DISK

TAPE   928

CD-ROM   930

LAN
ADAPTER

910

EXPANSION
BUS
INTERFACE

914

GRAPHICS
ADAPTER

918

AUDIO/VIDEO
ADAPTER

919

920   KEYBOARD AND
MOUSE ADAPTER

MODEM

MEMORY

FIG. 9

922

924

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FIG. 10 (BEGIN)

1002 — USER ENTERS ENVIRONMENT SERVED BY MICRONETWORK OF APD MACHINES

1004 — PROCESS OF DISCOVERY USED TO LOCATE SDG SO THAT THE SDG AND USER CAN COMMUNICATE TO LOCATE SERVICES

1006 — USER SUBMITS SERVICE QUERY

1008 — QUERY SENT TO SDG

1010 — SDG FORMULATES THE QUERY APPROPRIATELY AND SUBMITS IT TO THE REGISTRY FOR A RESPONSE

1012 — AVAILABLE SERVICES ARE RECEIVED IN RESPONSE FROM REGISTRY

1014 — CAN SERVICE BE INVOKED REMOTELY?

YES →

NO ↓

1016 — APDM INFORMED ABOUT USER'S REQUEST

1018 — APDM START COMMUNICATING DIRECTLY WITH USER

1020 — SEND LOCATION INFORMATION AND INVOCATION MECHANISMS

1022 — USER INVOKES SERVICES

1024 — USER INFORMED OF STATUS

SERVICE INVOCATION PERFORMED REMOTELY — 1028

USER INFORMED OF STATUS — 1030

1026 — USER CHARGED AND ACCOUNTING UPDATED

(END)